

GENERAL SPECIFICATION

TELECOMMUNICATION

GS EP TEL 121

LTE/4G and Point to Multipoint radio network

04	07/2019	Major update and LTE technology included
03	10/2015	General Update
02	10/2009	Wireless technology - WiMax
01	10/2008	Standards update and correction
00	09/2006	First issue
Rev.	Date	Purpose of the revision

Owning entity: SG/ISB	Managing entity: SG/ISB/SURF
Other Approving entity(ies):	

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1. Scope

The purpose of this General Specification is to define the minimum requirements for design, manufacture, installation and testing of Point to Multipoint radio network, using different technologies including LTE.

This specification shall apply to any and all industrial sites (offshore and onshore), campus, offices, accommodation camps, etc.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
Directive 2014/34/EU	Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres
IECEX	International Electrotechnical Commission System for Certification to Standards relating to Equipment for use in Explosive Atmospheres (IECEX System)
3GPP TR 21.905	Vocabulary for 3GPP Specifications
3GPP TS 25.990	Vocabulary for UTRAN
3GPP TS 23.251	Network sharing; Architecture and functional description
3GPP TR 22.951	Service aspects and requirements for network sharing
3GPP TS 36.104	Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); Base Station (BS) radio transmission and reception
3GPP TS36.306	Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio access capabilities

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Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP SAF 216	Area classification
GS EP TEL 133	Trunked radio networks
GS EP TEL 410	Installation rules
GS EP TEL 414	Telecommunication cables
GS EP TEL 700	Telecommunications Engineering services
GS EP DEV 001	Asset Objects Tagging
GS EP EXP 101	Pre-commissioning and Commissioning Specification
GS EP EXP 103	Pre-commissioning and Commissioning Engineering and preparation
GS EP EXP 105	Pre-commissioning Execution
GS EP EXP 107	Commissioning Execution

3. Terminology and Definitions

There are five types of statements in this specification, the “shall”, “should”, “may”, “can” and “must” statements. They are to be understood as follows:

Shall Is to be understood as mandatory. Deviating from a “shall” statement requires derogation approved by Company.

Should Is to be understood as strongly recommended to comply with the requirements of the specification. Alternatives shall provide a similar level of protection and this shall be documented.

May Is to be understood as permission.

Can Is to be understood as a physical possibility.

Must Expresses a regulatory obligation.

Company TOTAL E&P or any TOTAL E&P subsidiary.

Contractor Any Party that has signed a Contract with Company for the Engineering, Procurement, Construction, and Installation in part(s) or in full of a project.

Vendor/Supplier The Telecom System Integrator sub-contracted by the Contractor or by Company.

The technical vocabulary used for LTE are [3GPP TR 21.905](#) and [3GPP TS 25.990](#)

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3.1 Definition

Point to Multipoint (PMP) radio networks are typically used to extend wireless one or several networks (voice, data, video) from a central site to one or several satellite sites.

It's commonly used to provide indoor Telecom connectivity, interconnect boats in the vicinity of an offshore platforms, vehicles around on onshore plant ...

Wireless technology may vary depending frequency approval from local regulations, it could be LTE, WiFi, WiMax... Whenever concurrent solutions are available, LTE shall be implemented.

The technical vocabulary used for LTE are [3GPP TR 21.905](#) and [3GPP TS 25.990](#)

3.2 General rules

Coverage requirements may lead to the installation of several sectors or central sites. In such cases, the PMP solution shall allow Customer Premise Equipment (CPE) / User Equipment (UE) device to communicate with all sectors / central sites automatically: no intervention shall be required from the user. The CPE/UE shall communicate with the sector / central site from which it receives the best signal level.

For LTE solution, mobility shall be implemented: the communication shall not drop when the UE switch from one sector of the central site to another one. The handover shall be done transparently to the user without any intervention.

LTE network shall allow communications initiated by local server and from a UE. A layer 2 design network is recommended.

3.3 Geographical constraints

All geographical constraints on or around the sites shall be taken into account: sea water, mountains, deserts and obstacles (forests, buildings...), etc.

3.4 Environmental conditions

All indoor and outdoor equipment shall be suitable for continuous and reliable operation in the service conditions stated in the particular project specification.

All constraints shall be taken into account: marine environment (salt spray), extreme wind conditions, lightning and storm, extreme temperatures (high or low), high or low humidity, frost, dust, solar radiation, hazardous area...

All indoor equipment shall also be capable of operating for a short time at a temperature higher than nominal to cover for a shutdown of air conditioning.

Only equipment that are particularly suitable for this environment shall be selected and specified, and requiring minimal maintenance.

The Ingress Protection rating of the outdoor units shall be IP 65 minimum.

3.5 Site motions

In case of installation on a floating platform or any other type of vessel, the motions expected in operating conditions (roll, pitch, yaw, surge, sway, heave...) shall be taken into account.